A dynamic population of stromal cells contributes to the follicle stem cell niche in the Drosophila ovary.

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Public Summary:

Scientific Abstract:
Epithelial stem cells are maintained within niches that promote self-renewal by providing signals that specify the stem cell fate. In the Drosophila ovary, epithelial follicle stem cells (FSCs) reside in niches at the anterior tip of the tissue and support continuous growth of the ovarian follicle epithelium. Here, we demonstrate that a neighboring dynamic population of stromal cells, called escort cells, are FSC niche cells. We show that escort cells produce both Wingless and Hedgehog ligands for the FSC lineage, and that Wingless signaling is specific for the FSC niche whereas Hedgehog signaling is active in both FSCs and daughter cells. In addition, we show that multiple escort cells simultaneously encapsulate germ cell cysts and contact FSCs. Thus, FSCs are maintained in a dynamic niche by a non-dedicated population of niche cells.